A Revision of *Archontophoenix* H.Wendl. & Drude (Arecaceae)

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Summary

Dowe, John L. & Hodel, Donald R. (1994). A Revision of *Archontophoenix* H.Wendl. & Drude (Arecaceae). *Austrobaileya* 227–244. The genus *Archontophoenix* H.Wendl. & Drude (Arecaceae) is revised and accepted as containing six species. Four new species, *A. maxima, A. myolensis, A. purpurea* and *A. tuckeri* are named. *A. alexandrae* (F.Muell.) H.Wendl. & Drude and *A. cunninghamiana* (H.Wendl.) H.Wendl. & Drude are maintained. Notes on distribution and ecology are included, as are separate keys for vegetative material and flowering/fruiting material.

Keywords: Arecaceae - Australia, *Archontophoenix alexandrae, Archontophoenix cunninghamiana, Archontophoenix maxima, Archontophoenix myolensis, Archontophoenix purpurea, Archontophoenix tuckeri.*

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Introduction

Archontophoenix is a genus of moderate to large, single stemmed, pinnate-leaved, monoecious Arecoid palms endemic to eastern Australia. Greatest speciation has occurred in the moist subequatorial and tropical regions of northern Queensland between 10°S and 26°S where five of the six species occur. The sixth species extends from tropical central Queensland, 21°S, to warm-temperate New South Wales, 35°S.

Taxonomic History

The genus was established by Wendland & Drude (1875), comprising *A. alexandrae, A. alexandrae* var. *schizanthera, A. cunninghamiana* and *A. veitchii.* Bentham (1878) did not recognise the new genus, maintaining some of the species in *Ptychosperma*, though Hooker (1883) recorded *Archontophoenix* with two species. F.M.Bailey (1902) listed *A. alexandrae, A. beatriceae, A. cunninghamiana* and *A. jardinei*, but subsequently excluded the latter species (Bailey 1913). Domin (1915) listed only *A. alexandrae* and *A. cunninghamiana.* Cook (1915) created a new genus, *Loroma*, for taxa which he considered should not be included in, though were closely allied to, *Archontophoenix*. Cook's collections were from cultivated plants growing in Southern California. Burret (1928) corrected Cook's interpretation as well as errors by Drude (1882) and Dammer (1902) who had both named cultivated plants of *Archontophoenix* as species of the unrelated South American *Jessenia.* L.H.Bailey (1935) provided the first detailed synopsis of the genus since its establishment, listing *A. alexandrae, A. alexandrae* var. *beatriceae* and *A. cunninghamiana.* Bailey's work was the last serious taxonomic treatment. Recently, Uhl & Dransfield (1987 p.369) noted the genus had two species but suggested that "3–5 new species need to be described".

The possibility of undescribed species has been recognised for some time (Bailey 1935; Moore 1965; Tracey 1982; Rodd 1983; Jones 1984; Tucker 1988). Some of these taxa have received 'tag names' based on their locality, for example 'Mt Lewis *Archontophoenix*', 'Rocky River *Archontophoenix*' and 'Myola *Archontophoenix*'; such names have been adopted in both botanical and horticultural literature.

Materials and methods

This revision is the result of field studies undertaken in Queensland and New South Wales, an assessment of herbarium materials in BH, BRI, MEL, MO, NSW and QRS, a review of literature and unpublished field notes made by

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researchers during the last three decades. Cultivated specimens in The Palmetum and Anderson Park Botanic Gardens, Townsville, Mt Coot-tha Botanic Gardens, Brisbane and Honolulu Botanic Gardens, Hawaii, have been examined.

The keys have been constructed from both fresh and preserved material, supplemented with field observations.

Generic relationships

Archontophoenix is included in the subtribe Archontophoenicinae, which includes seven genera distributed in eastern Australia, New Caledonia, New Zealand and on Lord Howe and Norfolk Islands (Uhl & Dransfield 1987). This subtribe is characterised by palms with a tall, solitary, erect trunk; well developed crownshaft; pinnate leaves; inflorescence infrafoliar; two bracts enclosing the inflorescence more or less equal in length; inflorescence branches divaricate; flowers usually asymmetric, inserted spirally on the rachillae; gynoecium pseudomonomerous; fruit with more or less apical stigmatic remains; and the seed with a basal embryo.

The pattern of distribution of the Archontophoenicinae is similar to that of other rainforest taxa and is indicative of a discrete phytogeographic and floristic region centred on Australasia and islands in the South-west Pacific. This 'relictual' flora (Webb *et al.* 1986), in most parts, has descended from elements which are considered autochthonous to the now dispersed East Gondwanan sub-continent (Morat *et al.* 1986). Further support for an East Gondwanan origin for the subtribe (Dowe in press) is found in the lack of any closely related taxa to *Archontophoenix* occurring in areas to the north of the Australian mainland.

The most closely related genus, *Chambeyronia* Vieill. (2 spp.), occurs in New Caledonia. *Rhopalostylis* H.Wendl. & Drude, (2 spp. & 1 subsp.) from New Zealand and Norfolk Island, and *Hedyscepe* H. Wendl. & Drude (1 sp.) from Lord Howe Island, are also closely related. Other genera in the subtribe occur in New Caledonia. *Kentiopsis* Brongn. (1 sp.) and *Mackeea* H.E.Moore (1 sp.) are closely related to each other but are distant from *Archontophoenix*. *Actinokentia* Dammer (2 spp.) is morphologically isolated within the subtribe. Moore & Uhl (1984) suggested that the New Caledonia Archontophoenicinae may represent a single introduction, an assessment based on the uniformity of leaf anatomy within the New Caledonia genera.

The characters used to separate *Archontophoenix* from other genera in the subtribe include: fruit with seed endosperm ruminate; mesocarp with dispersed tannin cells; staminate flowers asymmetric; pistillode prominent.

Relative distribution, abundance and morphological variation

Three of the species, *A. alexandrae*, *A. cunninghamiana* and *A. tuckeri*, have an extensive distributional range both latitudinally and altitudinally and occupy many different habitats.

A. alexandrae shows little morphological variation throughout a latitudinal range of 1 400 km. It is ubiquitous in the swampy lowlands between Cooktown and Sarina. *A. cunninghamiana*, covering a range of almost 2000 km, exhibits a moderate increase in lamina thickness and overall reduction in size in the southern area of its distribution. This species and *A. alexandrae* display a sympatric occurrence in the Eungella area of central Queensland. This area is the northern limit of distribution of *A. cunninghamiana*, where it is confined to altitudes above 600 m. *A. alexandrae* extends from sea-level to about 800 m. Although these species are known to hybridise in cultivation, there is no evidence to suggest that hybridisation occurs in these sympatric populations. The barrier preventing natural hybridity has not been established. *A. tuckeri*, covering some 450 km in range from Cape York to McIlwraith Range, exhibits a moderate decrease in leaf size and trunk height in northern parts of its range. It is less abundant than the two preceding species, but still common throughout its range.

The remaining species, *A. maxima*, *A. myolensis* and *A. purpurea*, are of limited distribution and abundance. The first two species are rare, restricted to single drainage systems. *A. maxima* is confined to highland areas (800–1 200 m altitude) of the western Atherton Tablelands in the upper reaches of the Walsh River and its tributaries and the Mount Haig Range where it is locally abundant. *A. myolensis* occurs in lowland forest (350–400 m altitude) in the vicinity of Warrill Creek/Barron River west of Kuranda. The known population comprises less than 100 mature individuals and has an endangered conservation status. *A. purpurea* is confined to the upland/highland (400–1 200 m altitude) granitic massifs of Mounts Lewis, Spurgeon and Finnigan, where it is locally abundant.

The characters used to delimit species in this revision are listed in **Table 1**. Diagnostic fruit and floral characteristics of the species are given in **Table 2**.

Taxonomy

Archontophoenix H.Wendl. & Drude, Linnaea 39: 182, 211 (1875). **Type:** *A. alexandrae* (F.Muell.) H.Wendl. & Drude (lecto: fide Uhl & Dransfield 1987). L.H.Bailey, Gentes Herb. 3(8): 404–405 (1935); Uhl & Dransfield, Genera Palmarum 368–369 (1987).

Loroma O.F.Cook, Journ. Washington Acad. Sc. 5: 117 (1915). **Type:** *L. amethystina* O.F.Cook.

Moderately tall, solitary, erect, emergent, pleonanthic, monoecious palms. Trunks slender, frequently with a swollen base; leafscars prominent or not; internodes short or long. Leaves paripinnate, reduplicate, cleanly deciduous. Sheaths tubular, forming an elongate crownshaft eventually splitting opposite the petiole, green, brown or purple. Ligule absent. Petiole absent to moderately long. Rachis long. Pinnae linear-acute, inserted in a single plane along rachis, subopposite, erect to semi-pendulous, rigid or lax; midrib prominent, secondary ribs frequently present abaxially; abaxial surface green or with silver/grey scales, sometimes very dense to give silver/grey colour. Ramenta lacking, or present on midrib abaxially, medi-fixed. Inflorescence infrafoliar at maturity, branched to 3 or 4 orders, erect to pendulous paniculate, branches divaricate, protandrous. Bracts enclosing inflorescence 2, the prophyll attached at base of peduncle fully enclosing the peduncular bract; peduncular bract inserted slightly above attachment of prophyll, tubular; bracts deciduous immediately prior to floral anthesis; small to moderate rameal bracts often present. Peduncle stout, short. Rachis much longer than the peduncle. Rachillae erect or pendulous, elongate, zig-zagged throughout or only toward the apex. Flowers unisexual, sessile, lilac/purple or white/cream/light green, in well-spaced triads of a single pistillate flower subtended by a pair of staminate flowers one either side, borne spirally throughout the rachillae, or only on the proximal portion and then with staminate flowers distally, in pairs or solitary. Staminate flowers asymmetric in bud, three imbricate sepals, three valvate petals; petals much longer than sepals. Stamens 9–35; anthers dorsifixed, near the middle, basally bifid, apically pointed, latrorse; filaments curved or deflexed. Pollen white, elliptic, monosulcate, exine tectate, finely reticulate. Pistillode cylindric, about as long as stamens, tapered, apically lobed. Pistillate flowers smaller than the staminate, symmetric; three imbricate sepals; three imbricate petals briefly valvate at the apex; staminodes three, tooth-like; gynoecium unilocular, uniovulate; style short; stigmas three, recurved. Fruit conic-ovoid, ellipsoid, globose to sub-globose, one-seeded, coral pink, red or dark brick-red at maturity; stigmatic remains apical or sub-apical; epicarp thin, smooth or lightly pebbled; mesocarp thin, with fine to thick longitudinal fibres, terete or flat, unbranched or branched; endocarp thin, crustaceous or brittle, non-operculate; seed ovoid, globose to sub-globose, hilum lateral, raphe fibres elongate, anastomosing, adherent to the seed; endosperm ruminate; embryo basal. Germination adjacent-ligular. Eophyll bifid.

Six species endemic to eastern Australia in coastal and near-coastal lowlands and ranges; generally not found further inland than the Great Dividing Range, from sea-level to 1 200 m altitude, extending almost continuously in favourable habitats from Cape York, Qld, 10°40'S to Durras Mountain, NSW, 35°10'S.

Derivation of name: from the Greek *archon*, king or ruler, and *phoenix*, palm.

Table 1. Characters used to delimit the species of *Archontophoenix*.

Seed

1 degree of rumination of endosperm (shallow to deep)

Fruit

2 degree of adherence of raphe fibres to the seed (weak to strong)
3 degree to which mesocarp fibres are embedded in the endocarp (shallow to deep)
4 thickness of fibres in the mesocarp (thin to thick)
5 position of stigmatic remains (apical or sub-apical)
6 size

Flowers

7 orientation of the staminal filament (curved or deflexed)
8 number of stamens
9 colour (cream-white or lilac/purple)

Inflorescence

10 size
11 colour of axes (cream/white or green)
12 order of branching (3 or 4 orders)
13 stiffness or flaccidness of inflorescence branches

Leaf

14 ramenta on the midrib on abaxial pinna surface (absent or present)
15 silver/grey scales on the abaxial pinna surface (absent or present)
16 degree of lateral twist (moderate to strong)
17 colour of the crownshaft (green or other)

Table 2: Floral and fruit details of *Archontophoenix* species.

Species	Stamens (#)	Filament orientation	Fruit length (mm)	Mesocarp fibres diameter (mm)
A. alexandrae	9–16	curved	8–14	1
A.cunninghamiana	9–18	deflexed	10–15	1
A.maxima	11–16	curved	11–15	1
A.myolensis	14–24	curved	13–21	0.5
A.purpurea	20–35	curved	20–26	2
A.tuckeri	13–19	curved	15–25	3

Key to species of *Archontophoenix* based on fresh vegetative material of mature plants

1. Crownshaft dark-green, blue-green, bronze-green, brown or purple 2
   Crownshaft lime-green, whitish green, light to mid-green 4

2. Pinnae lacking ramenta abaxially on midrib; crownshaft blue-green, Warrill Creek/Barron River (Qld). . . . . **4. A. myolensis**
   Pinnae with ramenta abaxially on midrib 3

3. Pinnae lacking silver/grey scales abaxially; crownshaft not blue-green, Eungella (Qld) to Batemans Bay (NSW) . . . . **2. A. cunninghamiana**
   Pinnae with silver/grey scales abaxially; crownshaft plum purple; Mts Lewis, Spurgeon and Finnigan (Qld) . . . . **5. A. purpurea**

4. Leaves usually less than 3.5 m long, with less than 55 pinnae each side of rachis; pinnae tending to be semi-pendulous at the apex; crownshaft lime-green, Cape York to McIlwraith Range (Qld) . . . . **6. A. tuckeri**
   Leaves usually 3.5 m or more long, with 60 or more pinnae each side of rachis; pinnae usually rigid; crownshaft light to mid-green 5

5. Leaves ascending, held rigid; petiole absent or very short; Western Atherton Tablelands (Qld) . . . . **3. A. maxima**
   Leaves arching; petiole present, short to long; Bathurst Bay to Baffle Ck (Qld). . . . . **1. A. alexandrae**

Key to species of *Archontophoenix* based on floral/fruit characteristics

1. Fruit more than 14 mm long 2
   Fruit less than 14 mm long 3

2. Stamens more than 20 . . . . **5. A. purpurea**
   Stamens less than 20 . . . . **6. A. tuckeri**

3. Flower segments lilac/purple; staminal filaments deflexed . . . . **2. A. cunninghamiana**
   Flower segments white/cream; staminal filaments not deflexed 4

4. Mesocarp fibres less than 0.5 mm wide, unravelling in the dried state . . . . **4. A. myolensis**
   Mesocarp fibres more than 0.5 mm wide, not unravelling in the dried state 5

5. Flowers widely spaced on the rachillae; floral bracts round and low, anthers to 2 mm long . . . . **3. A. maxima**
   Flowers closely spaced on the rachillae; floral bracts raised with sharp margins; anthers 3.4–4 mm long . . . . **1. A. alexandrae**

1. **Archontophoenix alexandrae** (F.Muell.) H.Wendl. & Drude, Linnaea 39: 212 (1875); *Ptychosperma alexandrae* F.Muell, Fragm. 5: 47, 213. t. 43, 44 (1865). **Type:** Queensland. PORT CURTIS DISTRICT: Fitzroy R., scrub near upper flats, Jul 1866, *Bowman* [MEL 516571–516577] (holo: MEL (7 sheets)).

Archontophoenix alexandrae var. *schizanthera* H.Wendl. & Drude, Linnaea 39: 212. Pl. 3, Fig. 6 (1875). **Type:** Queensland. NORTH KENNEDY DISTRICT: Rockingham Bay, Jul 1866, *Bowman* s.n. (holo: MEL).

Archontophoenix veitchii H.Wendl. & Drude, Linnaea 39: 213 (1875). *Ptychosperma veitchii* H.Wendl. (*in lit. ad clar. lectorum Veitch*) Linnaea 39: 213 (1875). **Type:** Queensland. North Kennedy District: Rockingham Bay, Gould Island, Aug 1868, *O'Shanesey* s.n. (holo: MEL?).

Ptychosperma beatriceae F.Muell., The Chemist and Druggist 4, Australasian Supplement 77 (Feb 1882). *Archontophoenix beatriceae* (F.Muell.) F.M.Bailey, Queensl. fl. 5: 1675 (1902). *Archontophoenix alexandrae* var. *beatriceae* (F.Muell.) White ex L.H. Bailey, Gentes Herb. 3: 409 (1935). **Type:** Queensland. North Kennedy District: Mt Elliot, near Port Denison, Nov 1881, *Fitzalan* [MEL 516567–516570, 516578–516583] (holo: MEL (10 sheets)).

Jessenia glazioviana Dammer, in Engl., Bot. Jahrb. Syst. 31: 21 (1902). **Type:** Cult. ex Quinta São Christovão, Rio de Janeiro, Brazil, undated, *Glaziou* 20537 (holo: B [destroyed?]; iso: MO).

Palm to 30 m tall. Trunk to 30 cm DBH, green to light grey, enlarged at the base to 50 cm in diameter, becoming fissured with age. Leaf scars prominent, often stepped in the lower 2–3 m. Leaves 10–12 in the crown, to 4.5 m long, with a pronounced lateral twist, 60–80 pinnae per side. Crownshaft to 100 (130) cm long, elongate, light to mid-green or lime green, waxy, swollen, tapered toward the base and the apex, irregularly bulging near the attachment of the petiole. Petiole to 38 cm long, concave above, convex below. Rachis ridged above, convex below. Pinnae to 75 cm long, 3–5 cm wide, rigid, dark green adaxially, silver/grey abaxially due to presence of persistent dense silver/grey scales. Midrib prominent on both surfaces, cream, up to 12 secondary ribs prominent on abaxial surface. Ramenta lacking. Inflorescence 50–100 cm long, to 50 cm wide, branched to 4 orders, axes initially white, cream or light green, becoming brown/cream or green in infructescence. Prophyll to 78 cm long, to 12 cm wide, dorsiventrally compressed, light to dark green, winged, fibrous, with persistent black scales in the proximal portion. Peduncular bract to 44 cm long, to 6 cm wide, beaked, thickly fibrous, with persistent black scales densest distally, white/cream internally. Third bract non-enclosing, to 49 cm long, 9 cm wide, distally acute. Fourth bract acuminate to 2.5 cm long, to 2 cm wide. Peduncle to 15 cm long, to 8 cm wide, green. Scars of 3rd, 4th and 5th bracts positioned progressively above attachment of peduncular bract. Rachis erect, to 40 cm long, to 2.5 cm wide by 2 cm thick, angular proximally, becoming terete distally. Rachillae to 30 cm long, erect to semi-pendulous, becoming zig-zagged distally; triads borne on proximal 2/3–7/8, paired staminate flowers distally. Flowers white to cream. Floral bracts acute, triangular, to 2 mm high. Staminate flowers 6–9.5 mm long, 2–3 mm wide in bud, opening to 10 mm wide at anthesis. Sepals to 2 mm long. Petals 6–7 mm long, 2–2.6 mm wide, falcate, pointed, suffused light brown at the base, light brown on the inner surface distally. Stamens 9–16. Anthers 3.5–4 mm long. Filaments curved, to 2 mm long, cream/brown, lacking scales. Pistillode equal to or slightly longer than the stamens, acuminate/cylindric or fusiform. Pistillate flower to 4 mm high, to 3 mm wide. Fruit ovoid/globose, 8–14 mm long, 6–11 mm wide, bright red at maturity. Stigmatic remains prominent, apical. Calyx to 3 mm long. Epicarp smooth, waxy/glossy. Mesocarp fibres to 1 mm wide, flat, sparingly branched, remaining tight in the dried state. Endocarp brittle, lacking embedded mesocarp fibres. Seed globose, to 8 mm in diameter, raphe fibres weakly adherent. Endosperm moderately ruminate. Eophyll remains undivided until 5th–6th leaf. n = 16.

***Representative specimens*:** **Queensland:** Cook District: Cooper Ck, 16°11'S, 145°26'E, Aug 1972, *Hind* 216 (NSW); Mission Beach, Dec 1949, *Clemens* [AQ268542] (BRI); Clump Pt, Sep 1911, *White* 5475 (NSW); North Kennedy District: Mt Fox, Michael Ck, 18°50'S, 145°47'E, 630 m, Jun 1993, *Dowe* 110 (BRI); Paluma Ra., Hervey Holding, 19°15'S, 146°25'E, 500 m, Jun 1974, *Irvine* 900 (QRS); Mt Elliot, 1881, *Fitzalan* [AQ342251] (BRI, MEL); Mt Dryander, headwaters of Dryander Ck, 500 m, Oct 1969, *Webb* 10103[AQ75362] (BRI); Eastern fall, 20°15'S, 148°33'E, 400 m, Jul 1974, *Moriarty* 1810 (QRS); Repulse Ck, S.F.R. 229, 20°20'S, 148°45'E, 50 m, Aug 1974, *Irvine* 952 (QRS); Conway, 20°50'S, 148°30'E, 50 m, Aug 1974, *Irvine* 953 (QRS); South Kennedy District: Oct 1922, *Francis* [AQ75359] (BRI); Cawley S.F. 658, W of Cathu between Mackay and Proserpine, 600 m, Jun 1965, *Webb* 7689[AQ76063] (BRI); Cawley, N of Eungella, S.F.R. 652, between Mackay and Proserpine, Jul 1974, *Irvine* 951 (QRS); Mackay, undated, *Buchanan* [AQ75360] (BRI); Upper Camilla Ck, S of Sarina, 75 m, Jun 1965, *Webb* 7862[AQ75363] (BRI). PORT CURTIS DISTRICT: Byfield, Sep 1931, *White* 8192[AQ75355] (BRI); Rockhampton, Mar 1927, *White* 3364[AQ75361] (BRI); Shoalwater Bay Military Reserve, Jul 1977, *Clarkson* 838[AQ269148] (BRI); Erimbula, Dec 1970, *Webb* 10370[AQ326371] (BRI).

***Distribution and habitat*:** This species occurs in coastal Queensland between Melville Range 14°17'S and Baffle Creek 24°20'S. It is predominantly a lowland species but occasionally ascends to c. 600 m, and infrequently to c. 1 000 m. It occurs on off-shore continental islands such as Hinchinbrook Island and Magnetic Island (Tracey & Webb 1978; Jackes 1987; Sandercoe 1990). The most southern distribution is recorded at Baffle Creek, south of Gladstone (Batianoff & Dillewaard 1988). Irvine (1983) notes it in Melville Range, southeast of Bathurst Bay, Cape York Peninsula, which is possibly the northern limits of distribution.

This species is typically associated with swamps and drainage lines (Covacevich & Covacevich 1980). It also occurs commonly on interfluve ridges as a rainforest subcanopy element in very wet regions (up to 2500 mm rainfall per annum) as well as occurring in gallery forests along seasonally dry creeks. Soil types are diverse and include a variety of bedrocks; for example on basaltic and alluvial soils (Tracey 1982) and poorly drained piedmont alluvial terraces and lower granite footslope colluvium (Graham & Hopkins 1980).

***Phenology*:** Flowering occurs throughout the year. Mature fruit has been observed throughout the year.

***Etymology*:** Named for Princess Alexandra of Denmark.

***Conservation*:** Though most of this species' former range in the lowlands has been cleared for agriculture, it is adequately conserved in numerous National Parks and reserves.

***Typification*:** *Archontophoenix alexandrae* (basionym *Ptychosperma alexandrae* F.Muell.) is typified by *Bowman* s.n., July 1866 (MEL). The collection consists of seedlings and sections of leaf and inflorescence; sheet MEL 516577 is accompanied by pencil drawings of a single tree which was later used as the basis for the illustration by Mueller (1865). Bailey (1902) noted that this illustration was "not good, the stem too slender", thus suggesting it not to be a true representation. In addition to the Bowman collection, Wendland and Drude (1875) cited a collection by Nernst from Rockhampton at MEL. It consists of sections of inflorescence, loose fruit and a few flowers. A note, in Mueller's handwriting on one of the covers states, "panicle more ramified than in cunninghamii".

A few species and subspecies which are conspecific with *Archontophoenix alexandrae* have been named. *Archontophoenix alexandrae* var. *schizanthera* H.Wendl. & Drude was separated from the type taxon by its smaller inflorescence, prominent floral bracteoles, staminate flowers with 14 or 15 stamens, pistillode longer than the stamens, fruit about 14 mm long by 10 mm wide and broader pinnae. *Archontophoenix veitchii* H.Wendl. & Drude was distinguished by its inflorescence with thin rachillae, pointed bracteoles and pinnae green on both surfaces. *Archontophoenix alexandrae* var. *beatriceae* (F.Muell.) C.T.White was described with a maximum trunk height to 10 m and this being prominently stepped in the lower portion, stamens 8–12, and with smaller flowers and fruit than those on the type. It was collected on Mt Elliot.

2. Archontophoenix cunninghamiana (H.Wendl.) H.Wendl. & Drude, Linnaea 39: 214 (1875). *Ptychosperma cunninghamianum* H.Wendl., Bot. Zeit. 16: 346 (1858). **Type:** Hook. Bot. Mag. 83: t. 4961, Figs 1–6 (1857) (here designated as lectotype).

[*Seaforthia elegans* sensu Hook. Bot. Mag. 83. sub t. 4961, (1857), *p.p.*, non R.Br.]

Jessenia amazonum Drude, in Mart. Fl. Bras. 3(2): 474. pl. 109 (1882). **Type:** Cult. ex Rio de Janeiro, Brazil, undated, *Glaziou* 8062, (holo: B) [destroyed?].

Loroma amethystina O.F.Cook, Journ. Washington Acad. Sc. 5: 118 (1915). **Type:** Cult. ex Santa Barbara, California, U.S.A., 11 Nov 1914, *O.F.Cook* 694813, (holo: US).

Palm to 30 m tall. Trunk to 30 cm DBH, dark green to grey, smooth in the distal portion becoming fissured with age, slightly enlarged at the base. Root mound sometimes present, to 1 m tall. Leaves 9–12 in the crown, to 4.5 m long, arching, with a moderate lateral twist, 70–90 pinnae per side; new leaf occasionally with a bronze tinge. Crownshaft 70–140 cm long, narrow, tapered toward the apex, dark-green, brown/green or purple/green. Petiole to 50 cm long, to 5 cm wide, concave above, convex below, with rusty red/brown scales densest abaxially. Rachis ridged above, becoming sharp adaxially toward the distal portion, convex below. Pinnae to 100 cm long, 3–10 cm wide, rigid becoming lax/semi-pendulous with age, dark glossy green adaxially, lighter green abaxially, lacking silver/grey scales abaxially. Midrib prominent on both surfaces, brittle; secondary ribs not prominent, slightly raised adaxially in larger pinnae. Ramenta present on midrib abaxially, to 6 cm long, brown/red, twisted, basi- or medi-fixed, irregularly spaced, densest in proximal portion of pinnae. Inflorescence to 150 cm long, to 60 cm wide, branched to 4 orders, axes initially yellow/green, white or cream, becoming light green or mauve in infructescence. Prophyll 50–60 cm long, to 12 cm wide, dark green with sparse, persistent black scales, fibrous, winged, beaked apically (dries papery); peduncular bract to 58 cm long, tubular, thin, papery, mildly fibrous (dries papery). Third bract to 30 cm long, completely encircling peduncle at attachment; fourth bract acuminate, to 4 cm long; rachis branches subtended by small acuminate bracts. Peduncle to 15 cm long, 5–7 cm wide, yellow/green with red/brown scales, densest abaxially. Rachis to 60 cm long, to 3.5 cm wide by 2 cm thick, tapered to 4 mm thick distally; rachis branches angular, terete distally, white with brown scales in the proximal 1/8. Rachillae to 55 cm long, to 5 mm wide at attachment of basal triad, to 2 mm wide at distal triad, pendulous, becoming zigzagged distally. Triads borne on the proximal 5/8–7/8, well spaced, paired or solitary staminate flowers distally. Flowers lilac or purple. Floral bracts prominent, semi-cupular, acute. Staminate flowers 5–6 mm long, to 3 mm wide in bud, cupular to widely opening at anthesis to 11 mm in diameter, petals remaining cupped. Sepals to 1 mm high. Petals 4–5.5 mm long, 2–3 mm wide, fibrous, firm, falcate, pointed, gibbous basally, not detaching easily, scattered translucent scales on the outer surface, scales less dense on the inner surface; outer surface with dark dotted longitudinal nerves. Stamens 9–18. Anthers 1.5–2.5 mm long. Filaments purple, with light coloured scales in the basal 1/2, strongly deflexed near attachment to anthers. Connective elongate. Staminal ring dark purple. Pistillode 1/2 to equal length of stamens, tapering toward apex, irregularly lobed with 2–3 segments. Pistillate flower dark lilac, to 4 mm high. Fruit ovoid/globose, 10–15 mm long, bright red at maturity. Stigmatic remains not prominent, apical. Calyx 1.8–2 mm high. Epicarp waxy. Mesocarp fibres branched, flat, to 1 mm wide, loosening in the dried state. Endocarp crustaceous, lacking embedded fibres. Seed globose to 9 mm in diameter; raphe fibres embedded, strongly adherent. Endosperm deeply ruminate. Eophyll remains undivided until 4th–8th leaf. n = 14.

***Representative specimens*: Queensland:** SOUTH KENNEDY DISTRICT: Eungella, S.F.R. 679, 21°15'S, 148°33'E, 900 m, Jul 1977, *Irvine* 1838 (QRS); Sep 1938, *White* 13036 [AQ75368] (BRI); Crediton Area, Mia Mia, S.F.R. 411, Jul 1974, *Irvine* 946 (QRS); Palm Walk, 40 miles W of Mackay, Aug 1968, *Briggs* 2089 (NSW); Massey Ck, road junction W of Mackay, Oct 1951, *Smith* 4827[AQ198098] (BRI). PORT CURTIS DISTRICT: Mt Perry, undated, *Keys* [AQ75375] (BRI); Fraser Island, Oct 1930, *Hubbard* 4553[AQ75370] (BRI); Four miles W of Happy Valley, May 1967, *Baxter* 845[AQ75374] (BRI); Cooloola, ENE of Gympie, Sep 1970, *Moriarty* 432[AQ75376] (BRI); Bunya Mts, undated, *Bailey* [AQ75371] (BRI). MORETON DISTRICT: Mt Glorious, 600 m, Mar 1971, *Moriarty* 621[AQ75377] (BRI); Manorina N.P., D'Aguilar Ra., between Mt Glorious and Mt Nebo, Apr 1961, *Blake* 21473[AQ410961] (BRI); Tamborine Mt, Dec 1926, *White* 3335[AQ75369] (BRI). **New South Wales:** NORTH COAST: Whian Whian S.F., undated, *Webb* [AQ75372] (BRI); MacPherson Ra., Nixons Ck, 500 m, May 1951, *Johnson* s.n. (NSW); Coffs Harbour, Orara East S.F. 12 km NW of Coffs Harbour, May 1956, *Constable* s.n. (NSW); Empire Bay, 33°31'S, 151°21'E, sea-level, May 1993, *Dowe* 109 (BRI); Illawarra, Jul 1881, *Weber* s.n. (NSW); Nowra, southern head of Mattie's Ck, 10 km W Wandandian, Feb 1960, *Johnson & Constable* s.n. (NSW); Cedar Brush Ck, 45 km S Nowra, Aug 1952, *Floyd* s.n. (NSW).

***Distribution and habitat*:** This species occurs in the east coast lowlands and nearby ranges, from Eungella (Qld) 21°05'S to Durras Mountain (NSW) 35°10'S, from sea-level to 1 200 m altitude. Francis (1927) recorded it at about 1 000 m altitude on Mt Dalrymple, Eungella, in association with other species which also have their northern distribution limit in the area. Helman (1987) noted the southern limit on Durras Mountain in complex notophyll vineforest. The most inland occurrence, at c. 160 km inland, is at The Palms N.P., north-east of Cooyar in southern Queensland.

This species occurs predominantly in the vicinity of drainage lines and seepage zones in rainforest, swampforest, vine forest and wet sclerophyll forest. Soils are primarily alluvial, derived from granite, schist and basalt.

Other habitats include: depauperate low closed forest on windswept headlands and nearby hills or in association with *Melaleuca quinquenervia* (Cav.) S.T.Blake in semi-swampy areas (Batianoff & McDonald 1980); localised strand and beach ridge rainforest communities or in sclerophyll *Eucalyptus* forests on high sand dunes and rhyolite (McDonald & Elsol 1984); in beach sand deposits in association with *Cupaniopsis anarcardiodes* (A.Rich.) Radlk. (Baur 1957); and in rainforest on large unstable sand islands (e.g. North Stradbroke Island) off the southern coast of Queensland (Clifford & Specht 1979). Benson and Hager (1993) record this species as an associate of *Eucalyptus dunnii* Maiden in north-eastern New South Wales and south-eastern Queensland, on basalt and derived high nutrient alluvial soils (i.e. red-brown loams and black earths), particularly on the margins of rainforests in the 1 100 to 1 500 mm rainfall zone.

Phenology: Flowering has been observed all year but with an increased intensity occurring between June and January. Fruiting occurs all year but prolifically between December and March.

Etymology: Named for Allan Cunningham (1791–1839), British appointed Australian Colonial Botanist.

Conservation: Adequately conserved in numerous National Parks and reserves.

Typification: Wendland (1858) did not cite a specimen in his protologue for *Ptychosperma cunninghamianum*, though he noted Figs 1–8 of Hooker's (1857) illustrations for *Seaforthia elegans* R. Br. as being conspecific. Hooker (op.cit.) noted that the illustrations were made from a plant cultivated at Kew "... from seeds ... by Allan Cunningham; and one of these... represented in our figure ...'.

On close examination of Hooker's illustrations, it appears that only Figs 1–6 (not 1–8 as suggested by Wendland) are attributable to *Archontophoenix cunninghamiana*, whilst Figs 7–11 are of *Ptychosperma elegans* (R.Br.) Blume. Hooker's illustrations 1–6 are therefore designated as the lectotype of the name *Ptychosperma cunninghamianum*. Wendland noted that Hooker's illustration contained mixed elements, these being Allan Cunningham's collection from the east coast to 35°S (representing *A. cunninghamiana*), and Browns's collection from the north-east coast (representing *P. elegans*).

Wendland and Drude (1875) cited an additional collection by Nernst (MEL) which consists of leaf and inflorescence sections and a prophyll. A letter, dated April 1866, to Mueller from Howard McIntosh? (partially illegible surname), relating to the Nernst collection, accompanies the specimens. Description of the palm in the letter is too imprecise for a determination though the specimen is attributable to *Ptychosperma elegans*.

Domin (1915) superfluously published a new combination of the name '*A. cunninghamiana*' presumably to correct the misspelling of '*A. cunninghamii*' as used by Bailey (1902).

3. **Archontophoenix maxima** Dowe **sp. nov.** *A. alexandrae* (F.Muell.) H.Wendl. & Drude affinis sed habitu grandiore, foliis ascendentibus rigidis, inflorescentiis grandioribus differt. **Typus:** Queensland. COOK DISTRICT: Cultivated [ex Walsh River, Feb 1975 *Irvine* 1168 (QRS)], property of A.K.Irvine, Atherton, 4 May 1993, *Dowe* 106 (holo: BRI).

Palm to 22 m tall. Trunk to 30 cm DBH with prominent leaf scars, green to grey, becoming fissured with age, expanded to 50 cm at the base, stepped in the basal portion. Leaves 8–11 in the crown, to 4(5) m long, ascending, held straight, with a moderate lateral twist, to 85 pinnae per side. Crownshaft 74–145 cm long, mid-green with sparse black persistent scales, thick textured, heavily fibrous, slightly bulged at the base and at the apex near attachment of petiole. Petiole absent or to 20 cm long, to 9 cm wide, green, glabrous, flat to shallowly concave above. Rachis to 340 cm long, ridged above becoming sharp in the distal portion. Pinnae to 90 cm long, to 7 cm wide, coriaceous, dark green adaxially, silver/grey abaxially due to persistent dense silver/grey scales. Midrib prominent on both surfaces, brittle, thick, yellow/green; up to 9 secondary ribs prominent on the abaxial surface; pinnae remain rigid during the life of the leaf. Ramenta lacking. Inflorescence 80–140 cm long, to 100 cm wide, branched to 4 orders, smooth, axes cream/green initially, becoming green in infructescence. Prophyll to 105 cm long, winged with a beak at the apex, thick texture; peduncular bract to 80 cm long, strongly beaked at the apex, papery. Peduncle to 16 cm long, 6.8–12 cm wide, 2.8–4 cm thick, curved downward when fruit mature, proximal portion with prominent lateral 'horns'. Rachis with 18–23 main branches, angular, proximal branches to 8 cm wide, to 2 cm thick. Rachillae to 40 cm long, stiffly pendulous, proximally straight, becoming mildly zig-zagged in the distal 1/4, to 6 mm wide near attachment of basal triad. Flowers white/cream. Triads borne on proximal 7/8 of rachillae, widely spaced, paired staminate flowers distally. Floral bracts low, rounded. Staminate flowers 5–6 mm long, 2–2.5 mm wide in bud, opening to 11 mm wide at anthesis; petals not easily detaching. Petals 5–6 mm long, 2–2.5 mm wide, falcate, pointed, fleshy. Stamens 11–16, about as long as petals. Anthers 2 mm long. Filaments curved, connective very short. Pistillode about as long as stamens, cream/brown, tapered toward the apex which is shallowly lobed. Pistillate flowers to 5 mm high. Fruit conic-ovoid, 11–15 mm long, 7–12 mm wide, red at maturity. Stigmatic remains apical, moderately protrusive. Epicarp smooth, waxy and glossy. Mesocarp fibres moderately thick, to 1 mm wide, flat, sparingly branched. Endocarp brittle. Mesocarp fibres not embedded in endocarp. Seed globose, to 6 mm in diameter. Raphe fibres deeply embedded and strongly adherent. Endosperm deeply ruminate. Bifid portion of eophyll elongate. Cytology not studied. **Fig. 1. A_1–A_3.**

***Representative specimens*: Queensland:** COOK DISTRICT: Oaky Ck, S.F.R. 194, Sylvia L.A. 17°20'S, 145°25'E, 800 m, Aug 1972, *Irvine* 331 (NSW, QRS); ditto, 1 100 m, Jan 1975, *Irvine* 1125 (QRS); Walsh R., S.F.R. 194, 17°20'S, 145°25'E, 1020 m, Feb 1975, *Irvine* 1168 (QRS); W of Atherton, S.F.R. 194, 17°10'S, 145°20'E, 800 m, Feb 1964, *Moore* 9239[AQ75382] (BH, BRI); Mt Haig Ra., Robson L.A., immediately N of Tinaroo Dam, 900 m, Jul 1978, *Irvine* 1910 (QRS).

Distribution and habitat: This species is confined to the western Atherton Tablelands, north-east Queensland, on the upper reaches of the Walsh River and its tributaries, and in the Mt Haig Range to the north of Lake Tinaroo, at 800–1 200 m altitude. It most commonly occurs on stream-banks in association with rainforest elements, the surrounding vegetation being composed of open eucalypt forest with *Eucalyptus grandis* W. Hill ex. Maid. dominant; occasionally occurs in nearby wet sclerophyll forest or in rainforest patches. It is locally abundant within the known distributional range though re-examination of *Archontophoenix* populations in other upland and highland areas may possibly show these to be *A. maxima*.

Phenology: Flowering occurs from June to August. Fruit matures December to March.

Etymology: From the superlative *maximus* of the Latin *magnus*, 'great', in reference to the larger size of the inflorescence, and in particular the greater width of the peduncle as compared to all other species of *Archontophoenix*.

Conservation: Conserved in Danbulla S.F.R. 185 and S.F.R. 194.

Typification: The collection chosen for the type of this species (*Dowe* 106 (BRI)) consists of a complete leaf, sections of inflorescence, and staminate and pistillate flowers. The plant was grown from seed collected from S.F.R. 194 (Herberton Range), in the upper reaches of Walsh River on 13 February 1975, at 1020 m. According to Irvine (pers.comm.), seed of the plant from which the type was taken was sown on 17 February 1975, germinated on 7 April 1975 and planted out in December 1976.

Notes: In addition to the distinguishing features of the inflorescence, *Archontophoenix maxima* differs from other *Archontophoenix* species in that its leaves are ascending and rigid with only a moderate lateral twist. The petiole is frequently lacking, but if present can be 20 cm long on mature plants. The petiole is flat adaxially or shallowly concave in the proximal portion rather than moderately to deeply concave as in other *Archontophoenix* species.

4. Archontophoenix myolensis Dowe **sp. nov.** *A. alexandrae* (F.Muell.) H.Wendl. & Drude affinis sed fructibus reliquiis stigmatum subapicalibus, foliis longioribus, pinnarum costis flexuosis, foliorum vaginis venetis differt. **Typus:** Queensland. COOK DISTRICT: Myola, Warrill Ck, 16°48'S, 145°36'E, gallery rainforest, 350 m, *A.K.Irvine* 1780, 30 May 1976 (holo: QRS).

Palm to 20 m tall. Trunk to 30 cm DBH, green to grey, expanded to 50 cm at the base, smooth becoming fissured with age. Leaves 9–12 in the crown, to 4 m long, with a moderate lateral twist, 68–71 pinnae per side. Crownshaft 74–95 cm long, blue-green, tapered toward the apex, prominent bulges below the attachment of the petiole. Petiole to 22 cm long, to 4 cm wide by 2.5 cm thick, concave above, convex below. Rachis to 380 cm long, becoming sharply ridged above in the distal portion, convex below. Pinnae to 110 cm long, to 6.5 cm wide, coriaceous, dark green adaxially, with persistent moderately dense silver/grey scales abaxially. Midrib prominent on both surfaces, light green, moderately brittle, to 11 secondary ribs prominent abaxially; pinnae become lax with age. Ramenta lacking. Inflorescence 50–157 cm long, to 60 cm wide, branched to 4 orders, axes light cream initially, becoming light green in infructescence. Prophyll to 45 cm long, winged with a beak at the apex, thin texture; peduncular bract to 42 cm long, strongly beaked at the apex, papery. Third acuminate bract to 80 mm long by 9 mm wide, attached slightly above the attachment of the peduncular bract. Fourth bract to 14 mm long by 2.5 mm wide. Fifth bract, to 7 mm long, acuminate, subtends first rachis branch. Peduncle 8.5–23 cm long, 5–7.2 cm wide by 2.8–3 cm thick, green. Rachis to 70 cm long with 21–23 branches. Rachillae thin, to 4 mm wide at attachment of basal triad, becoming mildly zigzagged in the distal portion. Triads borne on proximal 2/3–7/8 of rachillae. Flowers white/cream. Floral bracts not prominent. Staminate flowers 5.5–9 mm high, 3–3.8 mm wide in bud. Sepals 1.5–3 mm high, to 2.5 mm wide. Petals 7–7.8 mm long, 1.5–3.8 mm wide, both surfaces with scattered light brown scales densest toward the base and the apex of the inner surface; petals detach easily. Stamens 14–24. Anthers to 3 mm long. Filaments curved, 3.5 mm long, cream/brown with rusty brown/red scales present. Pistillode tapered, to 4 mm long, sometimes longitudinally grooved, cream with brown/red scales toward the base, 2 or 3 terminal lobes. Pistillate flower with sepals and petals about equal in length, to 5 mm high. Fruit conic-ovoid-elongate, 13–21 mm long, 10–12 mm in diameter, red at maturity. Epicarp waxy. Stigmatic remains prominent, subapical. Calyx 2–3 mm high. Mesocarp fibres terete or flat, thin to thick, to 0.5 mm wide, branched, forked about midway, shallowly embedded in the endocarp. Endocarp crustaceous. Seed ovoid-elongate, 14–20 mm long, 8–9.5 mm wide, dull light brown, hilum narrow, raphe fibres strongly adherent. Endosperm moderately ruminate. Eophyll remains undivided until 3rd to 5th leaf. Cytology not studied. **Fig. 1. $B_1 - B_3$.**

***Representative specimens*: Queensland.** COOK DISTRICT: Myola, Warrill Ck, creek bank about 100 m upstream from confluence with Barron R., 400 m, May 1993, *Dowe* 107 (BRI).

***Distribution and habitat*:** This species is known only from the Myola area, 5 km NW of Kuranda, on Warrill Ck and nearby southern banks of the Barron River downstream from their confluence. It occurs in riverine rainforest at 350–400 m altitude on metamorphic rocks.

***Phenology*:** Flowering occurs from May to July. Mature fruit has been observed from December to March.

***Etymology*:** Named for the type locality, Myola.

***Conservation*:** This is an endangered species which is not conserved in any declared reserve or national park. The total population covers less than 10 km², and is estimated to have less than 100 individuals. The appropriate conservation rating is 2E (cf. Briggs & Leigh 1988).

***Typification*:** The type collection contains leaf and inflorescence sections, staminate and pistillate flowers, and fruit.

Notes: *Archontophoenix myolensis* is primarily distinguished by fruit with sub-apical stigmatic remains, rather than apical as in all other species, and mesocarp fibres which are loosely attached and 'unravel' readily to stand away from the endocarp, a feature which may aid settling of the seed in rheophytic conditions. The crownshaft has a blue-green tinge. The pinnae resemble *A. cunninghamiana* in gross appearance in that they tend to become lax and pendulous, though in surface features they are most similar to *A. alexandrae*, though the silver/grey scales on the abaxial surface are less dense than in that species.

5. Archontophoenix purpurea Hodel & Dowe **sp. nov.** insignis foliorum vaginis purpureis, fructibus grandissimis, pinnarum pagina abaxiali combinatione squamarum canarum et costae ramentis distincta. **Typus:** Queensland. COOK DISTRICT: Mt Lewis, montane rainforest, amongst granite boulders, 1 200 m altitude, 17 Apr 1993, *M.Ferrero* 101 (holo: BRI).

Palm to 25 m tall. Trunk to 45 cm DBH, expanded at the base, green to whitish/grey, smooth in the distal portion becoming deeply fissured with age, with slightly raised leafscars 3 cm wide, internodes to 10 cm wide. Leaves 7–15 in the crown, to 4(6) m long, held flat or with a moderate lateral twist, 55–85 pinnae per side; new leaf frequently with a bronze tinge. Crownshaft 105–150 cm long, obscurely but densely longitudinally striate, abaxially dark blue/grey/green covered with dense glaucous bloom and moderate to densely flecked with deciduous reddish/mahogany scales giving the sheath a plum-purple colour, glossy coppery-brown adaxially. Petiole to 40 cm long, to 12 cm wide narrowing to 1.5 cm at the rachis, convex below with a light coloured band extending to the sheath, concave above with central flat ridge to 3 mm high. Rachis to 4 m long, becoming sharply ridged above distally, convex below, light green adaxially and silvery lepidote abaxially throughout. Pinnae to 105 cm long, to 7.5 cm wide, rigid, coriaceous (brittle in the dried state), glossy light green adaxially, with persistent dense silver/grey scales abaxially. Midrib prominent on both surfaces, brittle, to 10 secondary ribs on lower surface. Ramenta present on midrib below (sometimes absent), to 5 cm long, medi-fixed, twisted, red/brown, irregularly positioned, most noticeable towards the base of the pinnae in the proximal half of the leaf. Inflorescence 50–135 cm long, to 65 cm wide, branched to 4 orders, axes initially light-green, becoming dark green in infructescence. Prophyll to 140 cm long, to 25 cm wide, glabrous or covered with reddish-brown scales. Peduncular bract attached 5 cm above prophyll, to 78 cm long, to 11 cm wide, glabrous, fibrous. A third bract to 11 cm long and 2.3 cm wide, acuminate, positioned slightly above attachment of peduncular bract. Peduncle to 25 cm long, 5.5–9(15) cm wide, with irregularly placed persistent brown scales, densest abaxially. Rachis to 65 cm long, up to 12 first order branches, angular in the proximal portion, terete distally. Rachillae up to 111 per inflorescence, to 85 cm long, irregularly zig-zagged, to 7 mm wide at attachment of proximal triad, tapering to 3.5 mm wide at distal triad. Triads borne on proximal 2/3–7/8 of rachillae, paired staminate flowers distally. Flowers cream with green suffusions. Floral bracts prominent, sharp (particularly in the dried state), angular. Staminate flowers 6–7 mm high, 4–5 mm wide in bud, white tinged with green, opening to 17 mm in diameter at anthesis; petals not easily detached. Petals 8–11 mm long, 3–5 mm wide, small brown scales on both surfaces but densest on the inner surface. Stamens 20–35, to 9 mm tall. Anthers to 6 mm long, dorsifixed near middle. Filaments curved, purple/brown with fine elongate brown/red-brown scales. Pistillode, about as long as stamens, with shallow longitudinal ridges, apex broad, lobed, light brown. Pistillate flower globose, white tinged with green, to 6.5 mm high. Fruit ovoid-ellipsoid-globose, 20–26 mm long, 18–22 mm in diameter, red/crimson at maturity. Stigmatic remains prominent, apical, (light coloured ring to 4 mm in diameter surrounds stigmatic remains in dried state). Calyx 3–9 mm high. Epicarp glossy, minutely pebbled (dries markedly pebbled). Mesocarp fleshy, fibres flat, to 2 mm wide, branched, overlaid and interspersed with thin straight fibres, some deeply embedded in the endocarp. Endocarp thin, crustaceous. Seed subglobose, to 23 mm long and 18 mm in diameter, light brown, glossy surface (seed dries cratered). Raphe fibres deeply embedded in seed. Endosperm deeply ruminate. Eophyll remains undivided until at least the 6th leaf. Cytology not studied. **Fig. 1. $C_1 – C_3$.**

***Representative specimens*: Queensland.** Cook District: Mt Lewis, 900 m, Sep 1971, *Moriarty* 833[AQ75380] (BRI); ditto, 16°30'S, 145°15'E, 915 m, Aug 1972, *Irvine* 324 (NSW, QRS); N Mary L.A., 900 m, Dec 1973, *Hyland* 7923 (QRS); Mt Spurgeon, Sep 1936, *White* 10688 [AQ75354] (BRI). **Cultivation. Queensland.** Mt Coot-tha Botanic Gardens (Acc.1502/77) [from Mt Lewis, May 1977, *Covacevich* s.n.], Jun 1993, *Cameron* s.n. (BRI); The Palmetum, Townsville (Acc.018–83–074) [from Mt Lewis, Feb 1983, *Tucker* s.n.], Jun 1993, *Dowe* 113 (BRI). **U.S.A. Hawaii:** Honolulu Botanic Gardens, Wahiawa Garden (HBG 65.1344–A) [from Mt Lewis, Australia, 1965, *Barry* s.n.], Jun 1993, *Hodel et al.* 1255 (BH); Ho'omuluhia Garden (HBG 77.332) [from Mt Lewis, Australia, 1977, *Bezona* s.n.], Jun 1993, *Hodel & Weissich* 1256 (BH).

***Distribution and habitat*:** This species is confined to Mt Lewis, 16°35'S, 145°17'E, Mt Spurgeon, 16°28'S, 145°12'E and Mt Finnigan, 15°48'S, 145°16'E, in north-east Queensland. It occurs mostly in highland rainforest up to 1 200 m altitude. It descends to 400 m altitude on the steep slopes of Mt Finnigan, in gullies where cool air descends in winter. Primarily confined to gullies and creeks where there is permanently flowing water, amongst granite boulders and in decomposed, compacted granite alluvium. Seeds often germinate in pools of shallow water. Individuals within the populations are well spaced, 2 or 3 m apart. Populations are numerous though small, usually including no more than about 20 individuals.

Tracey (1982) recorded this species in simple microphyll vine/fern forest on Mts Spurgeon and Lewis. Occurrence on Mt Finnigan is on the north-east face in vine forests restricted to gullies at 400–600 m altitude and in simple notophyll forest at 600–1 100 m altitude. Mt Finnigan is granitic with associated alluvia; Mt Lewis, also granitic, is deeply weathered with associated yellow earth.

***Phenology*:** Flowering occurs between November and April. Mature fruit has been observed from December to April.

***Etymology*:** From the Latin *purpureus*, purple; named for the distinctive colouration of the crownshaft.

***Conservation*:** Conserved in S.F. 143 and T.R. 66 [Mt Lewis], T.R. 140 [Mt Spurgeon] and Cedar Bay N.P. 212 [Mt Finnigan].

***Typification*:** The type collection consists of a complete leaf, a complete inflorescence and mature fruit.

***Notes*:** The purple colour of the leafsheath forming the crownshaft is due to three separate components of the sheath surface and indumentum. From the innermost to outermost they are the dark blue-grey green of the sheath surface, the powdery glaucous bloom, and the reddish mahogany coloured fleck-like scales. From a distance the three components merge to give the characteristic purplish colour. The merging of the three components, each of its own colour, can be likened to a style of painting called 'pointillism' developed by the 19th century French painter George Seurat. Instead of brush strokes, Seurat painted similar sized dots side by side. From a distance, the dots seem to merge and appear as, or suggest, other colours. In this case, the individual but closely spaced reddish mahogany flecks merge with the blue-grey green sheath tissue to make the purplish colour.

The distinctive plum purple crownshaft distinguishes *Archontophoenix purpurea* from all other species in the genus. In most populations of *A. cunninghamiana*, many individuals may have crownshafts which approach the colour of *A. purpurea*. However, the crownshafts of *A. cunninghamiana* are more of a patchy greenish red/purple, lacking the powdery glaucous bloom and blue tinge essential to make the plum purple colour so characteristic of *A. purpurea*. In addition to the purple crownshaft, a combination of other characters distinguish *A. purpurea* from other members of the genus. Vegetatively these include a combination, on the abaxial surface of the pinnae, of both dense persistent silver/grey scales and brownish ramenta along the midrib. These features are mutually exclusive in all other *Archontophoenix* species. Floral differences include more numerous stamens in male flowers (20–35). The fruit of this species is the largest (20–26 mm long) in the genus.

6. Archontophoenix tuckeri Dowe **sp. nov.** insignis combinatione fructuum grandium, foliorum brevissimorum, pinnarum paucissimarum angustissi-marum, petiolorum paginae adaxialis concavae profunde distincta. **Typus:** Queensland. Cook District: Upper Peach River, Bonanza Creek, common at water's edge in rainforest, 240 m altitude, Aug 1948, *Brass* 19831 (holo: BRI[AQ325430]).

Palm to 20 m tall. Trunk to 26 cm DBH with prominent leaf scars, expanded to 60 cm in diameter at the base, distinctly tapered to the apex, green to grey, smooth in the distal portion becoming fissured with age. Leaves 7–12 in the crown, to 3.15 m long, held flat or with a moderate lateral twist, 43–68 pinnae per side; new leaves often with bronze-red or pink tinge. Crownshaft 84–130 cm long, waxy light green or lime green, slightly bulging at the base, not bulged toward the attachment of the petiole, thin textured, tapered toward apex, light brown and glossy adaxially. Petiole to 44 cm long, deeply concave above, convex below, to 4 cm wide in the proximal portion. Rachis to 175 cm long, concave above with a broad flat ridge becoming sharp above in the distal portion, convex below. Pinnae to 93 cm long, to 5 cm wide, slightly falcate, apical 1/3 frequently semi-pendulous, dull mid to dark green adaxially, silver/grey abaxially due to dense persistent silver/grey scales. Midrib prominent on both surfaces, mid-green/yellow green adaxially; up to 8 prominent secondary ribs abaxially. Ramenta lacking. Inflorescence 30–60 cm long, to 70 cm wide, axes glabrous, initially light green, becoming dark green in infructescence, branched to 3 orders. Prophyll to 45 cm long, 12 cm wide, thin, fibrous, papery, yellow/green, winged, apically beaked, dorsiventrally compressed, silver/grey on the adaxial surface. Peduncular bract to 37 cm long, to 9 cm wide, tubular, thin, yellow/green, silver/yellow on the adaxial surface. A third bract positioned 2 cm above attachment of peduncular bract, acuminate, to 15 mm long, to 15 mm wide; additional bracts, 1–4 mm high, acuminate, persistent, subtend all first order branches. Peduncle to 12 cm long, to 4.5 cm wide, to 2 cm thick, green, terete, winged at the base. Rachis to 50 cm long, angular, with 8 main branches. Rachillae stout, to 30 cm long, prominently zigzagged throughout, to 9 mm thick at attachment of basal triad. Flowers white. Triads borne throughout rachillae. Floral bracts prominent, sharp, cupular. Staminate flowers 6.5–7 mm long, 2–3 mm wide in bud, opening to 11 mm wide at anthesis; petals detach easily. Sepals 1.5–3 mm long. Petals 4.5–7 mm long, 1.8–3.6 mm wide, falcate, pointed, with rusty/brown scales on both surfaces but densest toward the base of the inner surface. Stamens 13–19, about as long as petals, cream/brown to light purple. Anthers to 4 mm long. Filaments curved, cream/brown, with rusty-brown scales at the base; connective very short. Pistillode about as long as stamens, purple/cream, longitudinally grooved, apex with 2 or 3 lobes, basal portion with rusty red/brown scales. Pistillate flowers globose, to 5 mm high. Fruit ovoid, 15–25 mm long, 10–15 mm wide, bright red to dark brick-red at maturity (drying dark ochre). Stigmatic remains prominent, apical. Calyx to 5–6 mm high. Epicarp glossy (dries smooth). Mesocarp fibres in two distinct layers, the outer layer of fibres thin, occasionally branched, the inner layer thick, flat, to 3 mm wide, mostly branched, some embedded in the endocarp; fibres not usually loosening in the dried state. Endocarp crustaceous. Seed globose, to 9 mm in diameter, dull brown. Raphe fibres shallowly embedded in the seed. Endosperm deeply ruminate. Eophyll remains undivided until the 4th–6th leaf. Cytology not studied. **Fig. 1. D_1–D_3.**

***Representative specimens*: Queensland.** Cook District: Rocky R., eastern foothills of McIlwraith Ra., Oct 1969, *Webb* 9307[AQ252625] (BRI); Silver Plains, 80 m, Sep 1971, *Irvine* 00074[AQ116583] (BRI, QRS); Peach Ck, near Mt Coen, 120 m, Sep 1972, *Irvine* 339 (QRS); McIlwraith Ra., headwaters of Massey Ck near old mining site, Oct 1969, *Webb* 9192[AQ252626] (BRI); Western fall, Lankelly Ck, 200 m, Oct 1969, *Webb* 9665[AQ75353] (BRI); Iron Ra., 20 m, Jun 1948, *Archbold Cape York Expedition* 19159[AQ570011] (BRI); Claudie R., 12°45'S, 143°45'E, 30 m, Oct 1973, *Irvine* 699 (QRS); Tozers Gap area, Jun 1972, *Irvine* 230 (QRS); Heathlands, headwaters of Dulhunty R., Sep 1979, *Hyland* 10033 (QRS); Dulhunty R., W Cape York Peninsula, undated, *Whitehouse* s.n.[AQ75358] (BRI); Jardine R., 1 km N of McHenry R. junction, Dec 1979, *Irvine* 01980 (QRS); Nine Mile Scrub, Bamaga area between Carnegie Hill and Lockerbie, 60 m, May 1962, *Webb & Tracey* 6060[AQ75381] (BRI). **Cultivation. Queensland:** Atherton, property of A.K.Irvine [from Rocky R., undated, *Irvine* s.n.], May 1993, Dowe 108 (BRI); Anderson Park Botanic Gardens, Townsville (Acc. 002–81–009) [from Claudie R., Feb 1981, *Tucker* s.n.], Jun 1993, *Dowe* 114 (BRI).

***Distribution and habitat*:** This species occurs on Cape York Peninsula, north Queensland, between Cape York 10°40'S, 142°30'E and the southern McIlwraith Range 14°00'S, 143°20'E. It is particularly abundant on Peach Creek (flows on the inland side of McIlwraith Range) and Rocky River (flows on coastal side of McIlwraith Range), becoming uncommon in the northern part of its distribution. It occurs from sea-level to 500 m altitude, in rainforest, semi-deciduous or evergreen vineforest (Hynes & Tracey 1980), particularly along drainage lines and swampy or other moist sites, and in gallery forest composed of rainforest elements. Soils are rocky alluvium to sand. In the McIlwraith Range area, this species is most common along rocky creek beds and banks; in the Pascoe and Claudie Rivers area it is most common in swampforest and areas adjoining mangroves; and in the Lockhart River area it occurs in rainforest on sand-dunes. Lavarack and Godwin (1987) noted *Archontophoenix* (and other palm genera) as a feature of semi-deciduous mesophyll vine forest in the Iron Range and McIlwraith Range areas.

***Phenology*:** Flowering occurs from June to February. Mature fruit have been observed from August to November.

***Etymology*:** Named for Robert Tucker (1955–1992) who first published notes on the difference of this species (Tucker 1988).

***Conservation*:** Conserved in T.R. 14 McIlwraith Range, Rokeby and Croll Creek N.P., Iron Range N.P., Jardine River N.P. and Bamaga-Lockerbie Reserve.

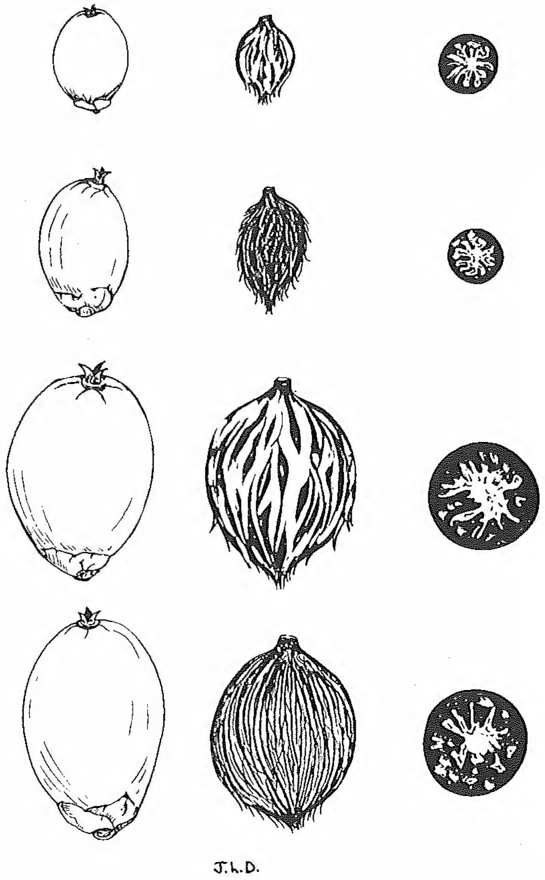

Fig. 1. A. *Archontophoenix maxima*: A_1. fruit; A_2 mesocarp fibres; A_3. seed in cross-section. B. *Archontophoenix myolensis*: B_1. fruit; B_2. mesocarp fibres; B_3. seed in cross-section. C. *Archontophoenix purpurea*: C_1. fruit; C_2. mesocarp fibres; C_3. seed in cross-section. D. *Archontophoenix tuckeri*: D_1. fruit; D_2. mesocarp fibres; D_3. seed in cross-section. All × 1. A, Dowe *s.n.*; B, Dowe 107; C, Ferrero 101; D, Dowe 108.

Typification: The type collection consists of leaf and inflorescence sections, staminate flowers and fruit. Brass (1953) alluded to this collection in his notes on the Archbold Expedition of 1948, noting a palm (quoted as similar to *A. alexandrae* seen at Iron Range) growing on the banks of Bonanza Creek in the Upper Peach River area of McIlwraith Range.

Notes: *Archontophoenix tuckeri* is distinguished by a combination of small leaves, large fruit, an inflorescence in which the axes emerge light green and become dark green as fruit matures, and the rachillae being prominently zig-zagged throughout their entire length. The crownshaft is a lime-green colour, on mature plants, and the petiole deeply channelled adaxially in the proximal portion.

Tucker (1988) provided the first discussion on the distribution, habitats and ecology of this species. Brass (1953) noted this taxon as '... the fine pinnate palm *A. alexandrae* seen at Iron Range on edges of running streams'. At Bonanza Creek, a tributary of the upper Peach River, he reported it at about 200 m altitude in association with *Blepharocarya involucrigera* F.Muell., *Cupaniopsis anacardioides* (A.Rich.) Radlk., *Pleiogynium timorense* (DC.) Leenh., *Pavetta* sp. and *Quintinia* sp.

Excluded Names

Archontophoenix jardinei F.M.Bailey, Qld Agri. J. 2(2): 129 (1898). = *Ptychosperma elegans* (R.Br.) Blume. In Qld Agri. J. 1(3): 232, (1897), Bailey listed this taxon as *Archontophoenix*[sp].

Archontophoenix elegans H.Wendl. & Drude ex Rock, Ornamental Trees of Hawaii 47 (1917) *nom. inval.* = *Ptychosperma elegans* (R.Br.) Blume (fide Essig 1978).

Loroma cunninghamiana (H.Wendl.) O.F. Cook, Journ. Washington Acad. Sc. 5: 118 (1915), *nom. nud.*

Seaforthia cunninghamii sensu F.M.Bailey, Compreh. Catal. 573. (1913) "... often sold by nurserymen as ....", *nom. inval.*

Seaforthia nobilis sensu J.Lhotsky, Journey from Sydney to the Australian Alps Undertaken in the months of Jan, Feb and Mar 1834: 59 (1835), *nom. inval.* = ?*Archontophoenix cunninghamiana* (H.Wendl.) H.Wendl. & Drude.

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